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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,519	10/06/2003	Manabu Hashikura	39.028-AG	2518

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JUDGE PATENT FIRM
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JAPAN

EXAMINER	
JAGAN, MIRELLYS	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/605,519	HASHIKURA ET AL.	
	Examiner	Art Unit	
	Mirellys Jagan	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *5* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7 and 9-13* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/21/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claim 5 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/21/04.

2. The election/restriction requirements stated in the last Office action, dated 9/21/04, is hereby repeated and thus made final.

Claim Objections

3. Claims 1-4 and 6-13 are objected to because of the following informalities:

In claim 1, there is lack of antecedent basis in the claim for "the gauging subject" in line 8.

In claim 2, there is lack of antecedent basis in the claim for "said measure article" in lines 5-6.

Claims 3, 4, and 6-13 are objected to for being dependent on an objected base claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6, 7, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,904,091 to Ward.

Ward discloses a temperature gauge comprising:

a thermocouple having a tip end;

a contact (26) exposed in the tip end of the thermocouple and contacting a temperature measuring site of a subject (30); and

detachable retaining means (12) for mechanically pressing upon the contact to retain it against the site;

wherein the retaining means is a retaining member that either screws together or is screwlocked into the subject for clamping the contact in between the retaining member and the subject; female threads are provided in the subject; the retaining member is a cylindrical form having male threads in its lateral surface for screwing together with the female threads of the subject so that one end face of the member presses the contact onto the subject; the member has a though-hole (17, 18) penetrating from one end face to the other end face thereof so that lead lines from the thermocouple can be passed through the through-hole; the member in an end face thereof is furnished with a recess (25) into which a communicating through hole opens so that the contact in the thermocouple tip and lead lines accompanying the contact can be housed in the recess; a tubular member (13) either joined to or furnished integrally with and end face of the member opposite to the end where the contact is clamped for accommodating lead lines from the thermocouple; a sealing member (27) for sealing gastight the end face of the retaining member opposite where the contact is clamped; and where the thermal expansion coefficient of the

member is about equal to the thermal expansion coefficient of the subject (see figures 1 and 2; and column 2, lines 37-49, 52-55, and 60-64).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ward in view of Japanese Patent 2002164291 to Shiyoku.

Ward discloses a temperature gauge as recited in claim 1. However, Ward does not disclose using the temperature gauge in a semiconductor manufacturing equipment having a ceramic susceptor.

Shiyoku discloses providing a thermocouple temperature gauge in a semiconductor manufacturing equipment having a ceramic susceptor. The temperature gauge is placed within the ceramic susceptor and bonded therein for measuring the temperature of a wafer as it is being progress by the manufacturing equipment (see figures 3 and 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the temperature gauge disclosed by Ward by using mounting it in a ceramic susceptor of a semiconductor manufacturing equipment since Shiyoku teaches that it is useful to provide a ceramic susceptor with a thermocouple temperature gauge in order to measure the temperature of a wafer as it is being progress by the manufacturing equipment.

8. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiyoku in view of Ward.

Shiyoku discloses a thermocouple temperature gauge in a semiconductor manufacturing equipment having a ceramic susceptor. The temperature gauge is placed within the ceramic susceptor and bonded therein for measuring the temperature of a wafer as it is being processed by the manufacturing equipment.

Shiyoku does not disclose the thermocouple temperature gauge being as recited in claim 1.

Ward discloses a temperature gauge as recited in claim 1, as stated above in paragraph 5. Ward discloses that the thermocouple temperature gauge is beneficial over thermocouples that are bonded to the object being measured since the threading of the temperature gauge allows for quick and economical fabrication and installation of the thermocouple temperature gauge to an object being measured.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the ceramic susceptor disclosed by Shiyoku by replacing the temperature gauge with a temperature gauge as disclosed by Ward in order to more quickly and economically install and replace a thermocouple temperature gauge in the susceptor.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ward in view of U.S. Patent 3,751,305 to Huebscher.

Ward discloses a temperature gauge having all of the limitations of claim 4, as stated above in paragraph 5, except for the other face of the retaining member having a groove for being turned by a turning tool when the retaining member is screwed in to the subject.

Huebscher discloses a retaining member comprising a screw (F) for threading into a subject (E) whose temperature is to be measured by a temperature sensor. The screw has a groove for being turned by a turning tool, e.g., screwdriver, when the retaining member is screwed in to the subject (see figure 8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the temperature gauge of ward by adding a groove for a turning tool, as disclosed by Huebscher, in order to facilitate threading the temperature gauge to the subject being measured.

Allowable Subject Matter

10. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and amended to overcome the objections set forth in this Office action.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or suggest the following in combination with the remaining limitations of the claims:

A temperature gauge comprising a recess having a depth that measures less than the thermocouple lead lines.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents disclose a thermocouple:

U.S. Patent 4,749,415 to Barton
U.S. Patent 3,376,170 to Logan et al
U.S. Patent 3,376,169 to Davis et al
U.S. Patent 5,427,452 to Stuart
U.S. Patent 6,239,351 to Hall, Jr.
U.S. Patent 2,829,185 to Macatician et al
U.S. Patent 2,625,573 to Connell
U.S. Patent 4,963,194 to Mele
U.S. Patent 6,257,758 to Culbertson
U.S. Patent 6,481,886 to Narendrnath et al
Japanese Patent 03261834 to Kawaguchi

The following patents and publication disclose wafer holders having a thermocouple for measuring its temperature:

U.S. Patent 6,084,215 to Furuya et al
U.S. Patent 6,507,007 to Van Bilsen
U.S. Patent Application Publication 2004/0004990 to Khan
Japanese Patent 61039540 to Murakawa et al

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mirellys Jagan whose telephone number is 571-272-2247. The examiner can normally be reached on Monday-Friday from 11AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ
December 20, 2004

Diego Gutierrez
Supervisory Patent Examiner
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GAIL VERBITSKY
PRIMARY EXAMINER